RAILROAD COMMISSION OF TEXAS

OIL AND GAS DIVISION

JANUARY 22, 2015

AGENCY FACT SHEET FOR DRAFT BRINE MINING INJECTION WELL PERMIT

Re: Application by Underground Services Markham, LLC for a Permit to Create, Operate, and Maintain a Brine Mining Facility to be known as the H. Smith Brine Station; Markham Field; Matagorda County, Texas

Underground Services Markham, LLC submitted an application (Form H-2 with attachments) to the Railroad Commission of Texas dated October 14, 2014 for a Permit to Create, Operate, and Maintain a Brine Mining Facility to be known as the H. Smith Brine Station, Markham Field, Matagorda County, Texas. The applicant has requested authority to produce brine by injection of freshwater to dissolve salt from the Markham Salt Dome within the approximate subsurface interval from 3000 feet to 7350 feet. The applicant proposes to complete and case the well such that the injected fluid is confined to the injection interval. Surface injection pressure will be limited to a maximum of 2800 pounds per square inch gauge. The maximum allowable injection pressure at the casing seat will be limited to 0.8 times the overburden pressure at that depth. Should a permit be issued, the Commission would include other conditions and requirements as necessary, such as monitoring and reporting of the extracted brine, mechanical integrity testing of the well, groundwater monitoring, and plugging and abandonment.

Oil and Gas Division technical staff has reviewed the application and determined that, based on the information contained in the application, the proposal will not endanger underground sources of drinking water as it meets or exceeds the minimum requirements for casing and cement to isolate the brine mining injection interval and the operating facilities are designed to prevent the uncontrolled discharge of brine at the surface.

Notice of the application was published in the *Bay City Tribune* newspaper on October 22 and 29, 2014, and November 5, 2014.

Attached is a Draft Permit for the subject application. Should you wish to file comments on the application or Draft Permit, you should submit your comments in writing, no later than February 21, 2015, to:

Railroad Commission of Texas
Attn: Michael Sims, P.E.
Oil & Gas Division, Technical Permitting
PO Box 12967
Austin TX 78711-2967

Should you have any questions, you may contact Michael Sims at 512.463.5405 or michael.sims@rrc.state.tx.us

Service List

The United States Environmental Protection Agency
Attn: Mike Frazier
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202
Via e-mail to frazier.mike@epa.gov

Texas Commission on Environmental Quality
Attn: Underground Injection Control Program
MC-232
P. O. Box 13087
Austin, Texas 78711-3087
Via e-mail to UIC@tceq.texas.gov

Texas Parks and Wildlife Department
4200 Smith School Road
Austin, Texas 78744
Via e-mail to WHAB@tpwd.texas.gov

Texas Department of State Health Services
Attn: Government Affairs
PO Box 149347
Austin, Texas 78714-9347

Texas Historical Commission
Attn: Government Relations
PO Box 12276
Austin, Texas 78711

DRAFT PERMIT TO CREATE, OPERATE AND MAINTAIN A BRINE MINING INJECTION FACILITY

ISSUED TO:

UNDERGROUND SERVICES MARKHAM, LLC
4800 SAN FELIPE
HOUSTON, TX 77056

Based on the information contained in the application (Form H-2 dated October 14, 2014) and in accordance with the applicable provisions of Chapter 27 of the Texas Water Code, Chapter 91 of the Texas Natural Resources Code, and pursuant with applicable rules of the Railroad Commission of Texas, Underground Services Markham, LLC is hereby authorized to create, operate and maintain a brine mining injection facility designated as follows:

Underground Services Markham, LLC (Operator No. 875778)
H. Smith Brine Station
H. Smith Lease (Lease No. To Be Assigned)
Well Nos. 1-23
Markham Field
Matagorda County, Texas
28.9921 N, 96.14783 W (Approximate Center Point of Proposed 23 Wells)
District 03

Authority is granted to produce brine by injection of freshwater to dissolve salt from the Markham Salt Dome through the wells identified herein and subject to all applicable provisions of the Texas Water Code, Texas Natural Resources Code, the Commission's Statewide Rules, and the following special terms and conditions:

A. Injection Interval: Brine may be produced by the injection of fresh water into the Markham Salt Dome formation within the approximate subsurface interval from 3000 feet to 7350 feet in the following wells located within Block 5 of the H. Parker Survey, Abstract 68, Matagorda County:

Well Number	API No.	UIC No.	Feet From North Survey Line	Feet From East Survey Line
1	321-00000	To Be Assigned	400	13,520
2	321-00000	To Be Assigned	400	13,020
3	321-00000	To Be Assigned	400	12,520
4	321-00000	To Be Assigned	400	12,020
5	321-00000	To Be Assigned	400	11,520

Well Number	API No.	UIC No.	Feet From North Survey Line	Feet From East Survey Line
6	321-00000	To Be Assigned	850	13,270
7	321-00000	To Be Assigned	850	12,770
8	321-00000	To Be Assigned	850	12,270
9	321-00000	To Be Assigned	850	11,770
10	321-32380	To Be Assigned	1300	13,520
11	321-32381	To Be Assigned	1300	13,020
12	321-00000	To Be Assigned	1300	12,520
13	321-00000	To Be Assigned	1300	12,020
14	321-00000	To Be Assigned	1300	11,520
15	321-00000	To Be Assigned	1750	13,270
16	321-00000	To Be Assigned	1750	12,770
17	321-00000	To Be Assigned	1750	12,270
18	321-00000	To Be Assigned	1750	11,770
19	321-00000	To Be Assigned	2200	13,520
20	321-00000	To Be Assigned	2200	13,020
21	321-00000	To Be Assigned	2200	12,520
22	321-00000	To Be Assigned	2200	12,020
23	321-00000	To Be Assigned	2200	11,520

B. Completion: The well shall be completed and cased such that the injected fluid is confined to the injection interval.

C. Injection Pressure: The surface injection pressure for each well shall not exceed 2800 pounds per square inch gauge (psig). The maximum allowable injection pressure at the casing seat in the wells shall not exceed 0.8 times the overburden pressure at that depth.

D. Monitoring and Reporting: The amount and specific gravity of brine extracted shall be recorded and tabulated daily. The total volume of brine produced from the wells shall be recorded monthly. Records of the volume of brine production shall be kept for the life of the wells. Brine production data shall be provided to the Commission as soon as practicable upon request. The Commission may direct the operator to conduct sonar caliper surveys of the wells or other tests in the event data indicates the solution-mined interval has become structurally unstable or otherwise represents a hazard to environmental health and safety.

E. Mechanical Integrity Testing: Mechanical integrity shall be demonstrated annually by means of a hydrostatic fluid pressure test, or an acceptable alternate method. Continuous monitoring of the water injection pressure, the brine production pressure, and the hydrocarbon roof pad pressure shall be considered an acceptable alternate method, so long as any drop in the hydrocarbon roof pad pressure initiates a temporary discontinuation of injection into the well and an investigation to determine the cause of the drop in the hydrocarbon roof pad pressure. Injection shall not resume until it has been established that the pressure drop was not the result of any mechanical integrity issues. The results of the pressure monitoring shall be reported annually to the Commission's office in Austin, Texas.

F. Cavern Volume: The maximum permitted cavern capacity of each cavern (cavern size, not brine storage volume) shall not exceed 2,640,000 barrels. The permittee shall apply for an amendment to the existing permit to increase cavern capacity in excess of this volume.

G. Injection Fluid: The injection fluid is limited to fresh water either sourced from the Colorado River via an agreement with the Lower Colorado River Authority or pumped from water supply wells owned by the permittee. The injection rate of fresh water and the total amount of fresh water injected shall be recorded and reported annually to the Commission's office in Austin, Texas.

H. Completion Report: Any change in well completion requires filing a new Form W-2 in duplicate with the District office.

I. Storage and Disposal: This permit does not authorize the storage or disposal of any substance other than the resident brine within the cavity developed through injection of fresh water.

J. Plugging and Abandonment: A plugging and abandonment plan shall be submitted to this office for review prior to plugging operations.

K. Operator Change: This permit is not transferable without the consent of the Director. Any request for permit transfer shall be filed with the Director or Director's Delegate.

Provided, that should it be determined that injected fluids are not confined to each cavern and well, then the permission given herein shall be suspended until the nature of the leak is determined and remedied.

Approved and issued on XXXXXX .